



Tree Canopy and Land Cover: Tacoma's GIS Approach

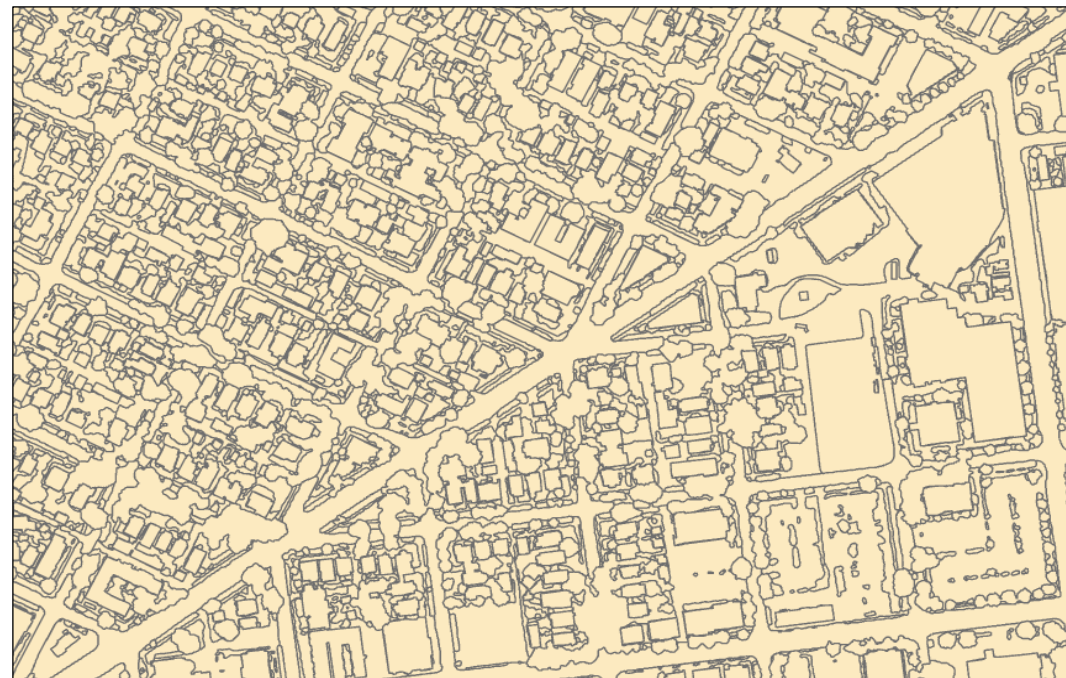
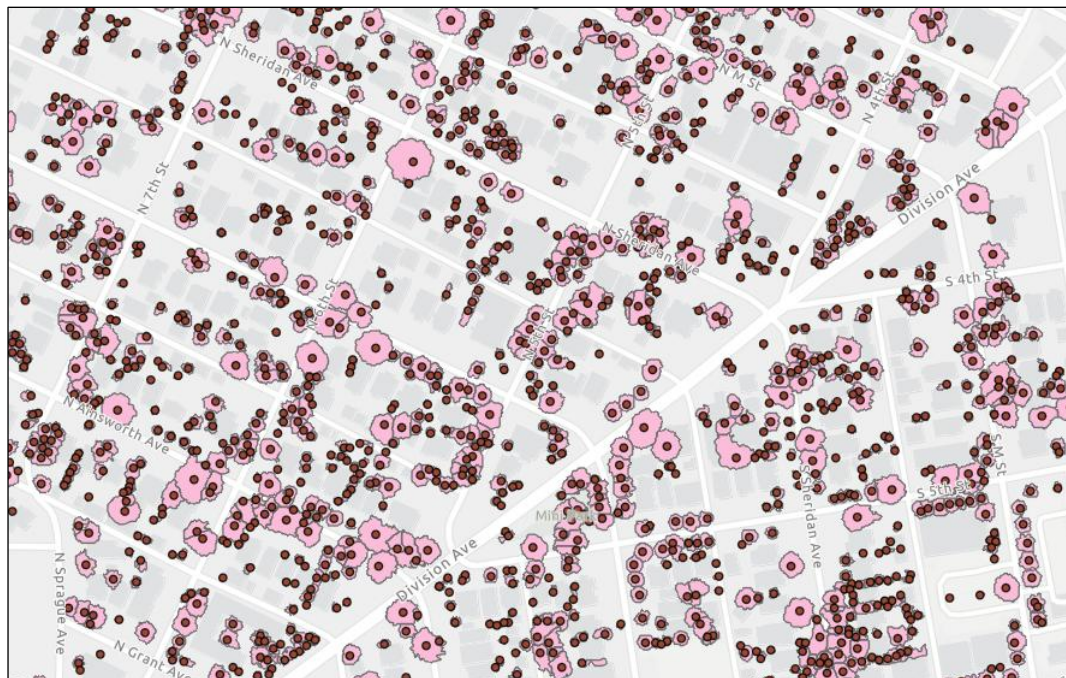
2026 Washington GIS Conference

Agenda

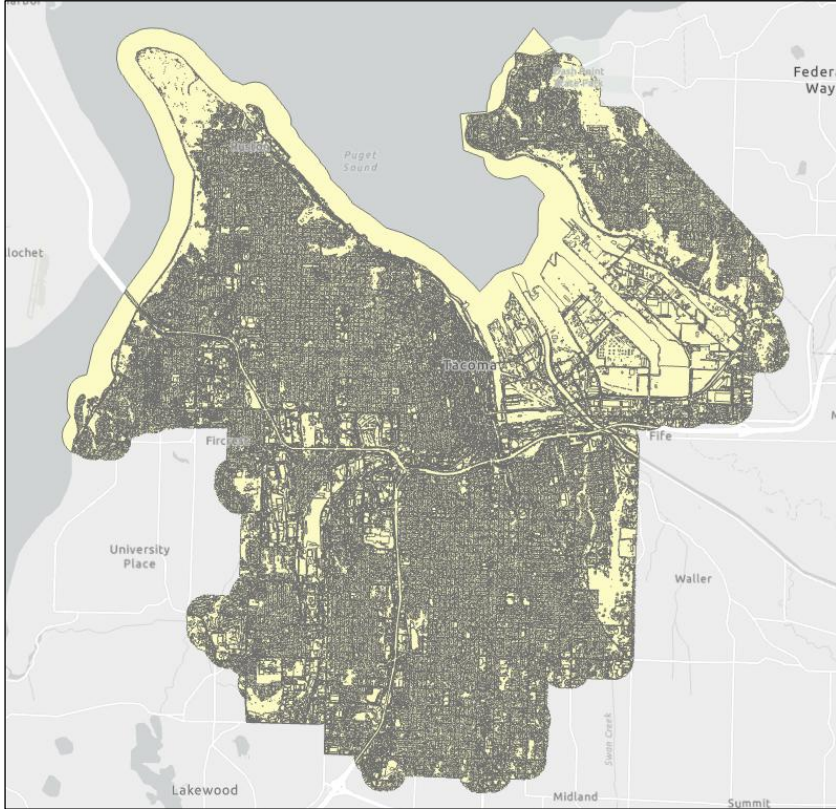
- High-level overview
- Spatial analysis – transforming raw data in ArcGIS Pro
- Cleaning and validating the dataset
- Key takeaways



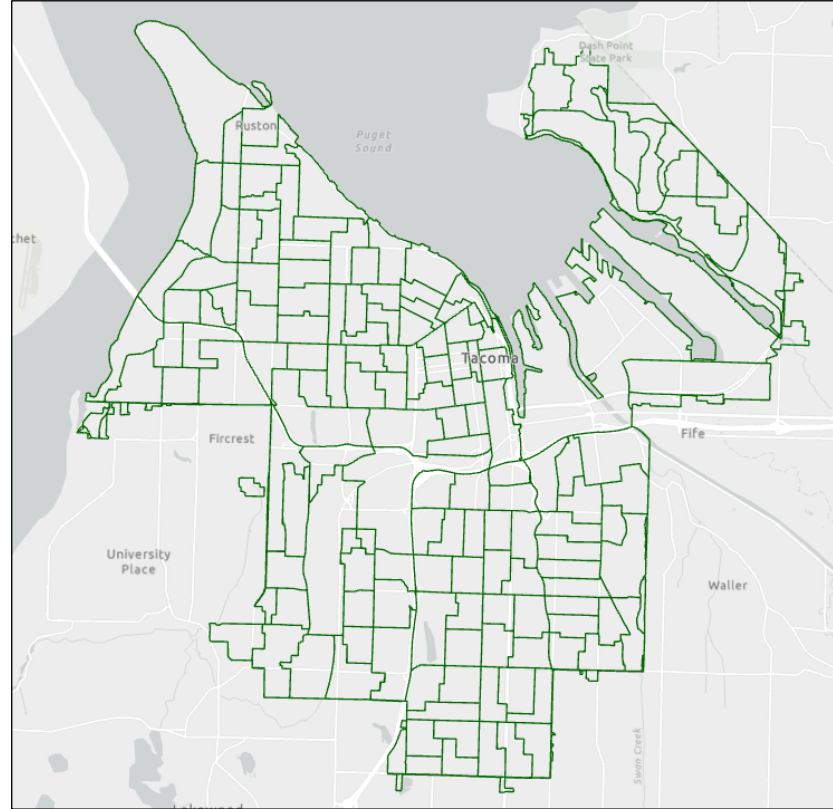
Consultant Deliverables



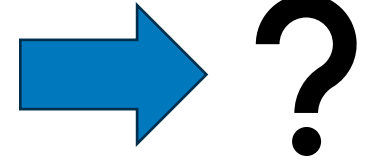
High-resolution LiDAR and imagery from NV5 provided **tree points** and **land cover classifications** across Tacoma.



Land cover



Census blocks



Summarize Within

- Overlays two layers to compare features
- Counts features within polygons
- Calculates summary statistics
- Supports totals, averages, minimums, and maximums

Geoprocessing

Summarize Within

Parameters Environments

Input Polygons
2020 Census Block Groups

Input Summary Features
Land Cover

Output Feature Class
LandCover_SummarizeWithin

Keep all input polygons

Summary Fields

Field	Statistic

Add shape summary attributes

Shape Unit
Acres

Group Field
Description

Add minority and majority attributes

Add group percentages

Output Grouped Table
Description_Summary

Pivot Table

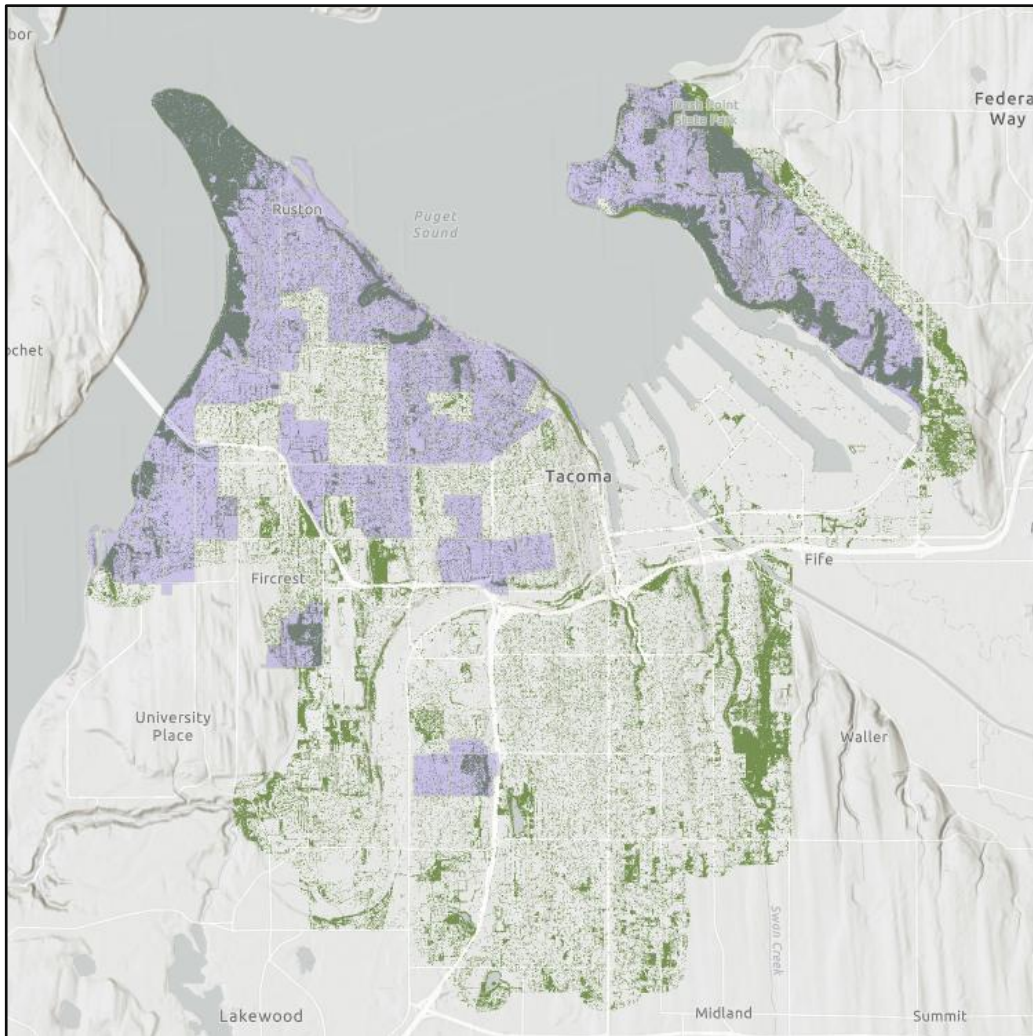
OBJECTID *	Join ID	Description	Summarized Area in ACRES	Count of Polygons
1	1	Building	409.771918	1170
2	1	Non-Canopy Vegetation	144.814103	2381
3	1	Other Impervious	2233.877375	560
4	1	Road	237.076391	33
5	1	Soil and Dry Vegetation	321.20953	3945
6	1	Tree Canopy	149.097396	4870
7	1	Water	59.576617	76
8	2	Building	44.737021	692
9	2	Non-Canopy Vegetation	78.969901	2675
10	2	Other Impervious	69.26695	670
11	2	Road	31.467929	170
12	2	Soil and Dry Vegetation	60.186232	1509
13	2	Tree Canopy	614.891538	1798
14	2	Water	0.740464	23

Grouped table – output of Summarize Within

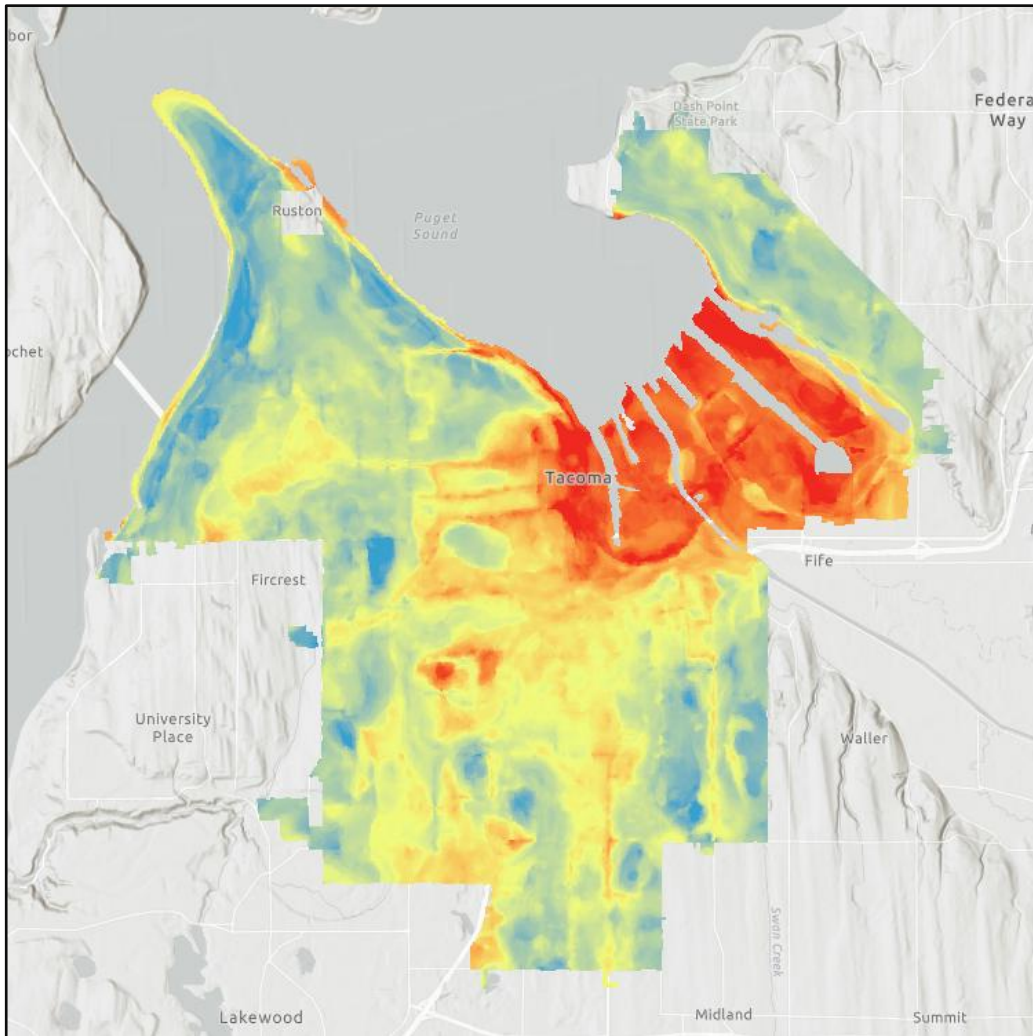
We can work with this!

OBJECTID *	Join ID	Building	Non-Canopy Vegetation	Other Impervious	Road	Soil and Dry Vegetation	Tree Canopy	Water
1	1	409.771918	144.814103	2233.877375	237.076391	321.20953	149.097396	59.576617
2	2	44.737021	78.969901	69.26695	31.467929	60.186232	614.891538	0.740464
3	3	32.642271	24.437193	31.595522	20.963763	31.835402	25.554779	0.010446
4	4	19.888757	10.693489	18.607145	15.965217	19.947491	16.348831	0.018348
5	5	33.499837	58.375175	36.578288	29.909773	33.374947	121.568625	0.231905
6	6	25.206981	20.187255	17.442681	21.434572	19.231252	31.618315	0.015119
7	7	29.585501	22.949988	21.706817	24.029826	32.67841	27.921893	0.015466





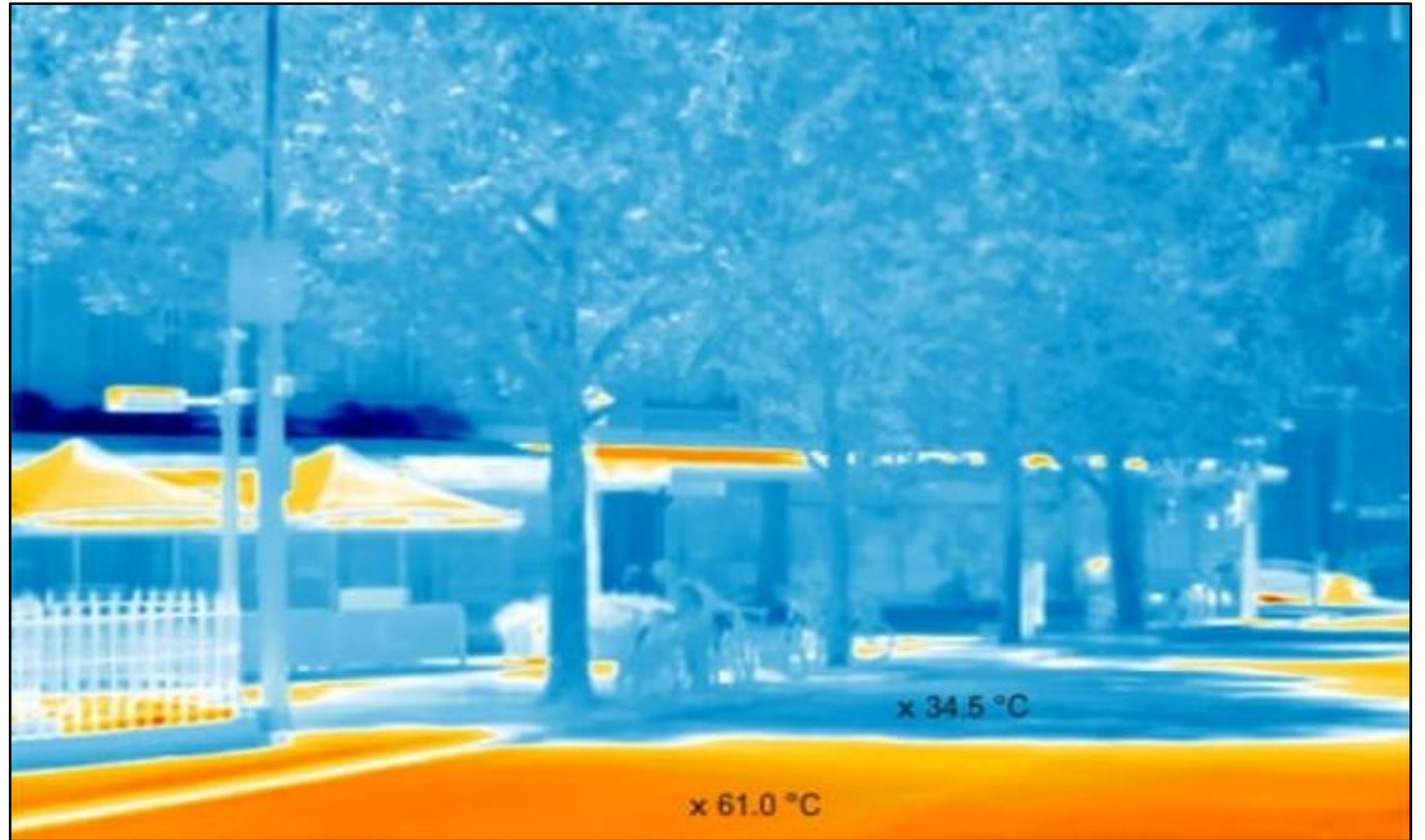
Higher opportunity neighborhoods have **11% more tree cover** than lower opportunity neighborhoods.



A 2020 analysis found that urban heat islands in Tacoma increase maximum temperatures by as much as **6.2°F** above the local baseline.

More Trees, Healthier Communities

- Low-cost community cooling
- Wealthier neighborhoods have more trees
- More trees = cooler air, reduced flooding, improved public health





Thank you!

Let's connect 😊



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